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Józef RAZOWSKI

Notes on the System of *Polyorthini* (*Lepidoptera, Tortricidae*)

[with 17 text-figs.]

Uwagi o systemie *Polyorthini* (*Lepidoptera, Tortricidae*) *

Abstract. The system of the genera of *Polyorthini* is discussed and the Neotropical genera redescribed. Three genera are described as new.

INTRODUCTION

The history of the studies on the tribe in question is provided by DIAKONOFF (1974) who gathered the data on the Old World fauna and listed the species of the Neotropical genus *Polyortha* DOGNIN. The mentioned work comprises also the characteristics of the tribe and the first systematic arrangement of the genera and species. Some genera were recognized as belonging in *Polyorthini* and transferred from other tribes.

The study on the morphology of the skeleton of the male genitalia, their musculature and function as well as some remarks on the generic system were completed in my paper of 1979.

Unexpectedly two Palaearctic genera, viz., *Olindia* HÜBNER and *Isotrias* MEYRICK appeared to be transferable to *Polyorthini* (RAZOWSKI 1979a).

SYSTEMATIC PART

Old World genera

In the Oriental and Australian Regions occur 7 genera, 6 of which are discussed by DIAKONOFF (1974). Now, the genus *Sociosa* DIAKONOFF is included in the tribe. The following characteristics is necessary to define the systematic position of this genus; for other data see the original description.

* Praca wykonana w ramach problemu MR. II. 3.

Sociosa DIAKONOFF

Sociosa DIAKONOFF 1959 (not 1963), Arkiv zool., 12: 167. Type-species: *Peronea macrographa* DIAKONOFF, 1959.

Male genitalia (figs. 2, 3): tegumen fairly large, broadening in distal third, terminating in two lobes between which short, dorsal sclerite most probably representing the uncus is developed. Socius large, broadly attached to lateral part of distal portion of tegumen, provided with pectinate, transformed setae and scarce hair. Gnathos slender, simple, with reduced terminal plate. Valva elongate-ovate with costa reaching to middle; sacculus rather thick. Dorsal split rather short. Transtilla slender, fused with weakly sclerotized dorsal part of anellus. Pair of elongate, spined sclerites probably representing lateral parts of anellus present. Juxta elongate dorsad, concave apically. Aedeagus produced ventro-terminally; coecum penis large.

Female unknow.

Neotropical genera

Histura gen. nov.

Type-species: *Polyortha hirsura* WALSINGHAM, 1914

Forewing expanding terminally, subtriangular with apex short, sharp; coloration cryptic; large tufts of erect scales present. In forewing vein r_5 to apex, cu_1 curved, cu_2 from middle of median cell; in hindwing rr—m_1 stalked to 1/5, m_3—cu_1 with short stalk.

Male unknown.

Female genitalia (fig. 4). Sterigma in form of slender lateral arms fused medially with tubular antrum; ductus bursae slender, coiled spirally in proximal portion, provided with proximal cestum; ductus seminalis submedian, situated dorsally. Signum in form of slender, transverse plate developed in wall of a shallow pocket-shaped concavity of corpus bursae.

The name is an anagram of the specific name of the type-species. Three species known (cf. p. 313).

Lypothora gen. nov.

Type-species: *Teras walsinghami* BUTLER, 1883

Forewing somewhat expanding terminally; termen fairly long, usually sinuate; coloration of cryptic type. Venation not examined.

Male genitalia (figs. 5, 6): tegumen broad; uncus long, slender; gnathos delicate, with slender terminal plate; socius very large, long, terminating in

minute spine. Transtilla, anellus and saccus as in *Polyortha* and other allied genera. Valva large, with split reaching to its apex. Coecum penis short, but distinct.

Female genitalia (figs. 7, 8): sterigma developed as a slender antevaginal plate characterised with distinct ventral edge, membranous dorsally; antrum marked with internal sclerite folding dorsally. Ductus bursae with numerous longitudinal folds; signa: two sack-shaped sclerites expanding at the surface of corpus bursae.

The name is an anagram of *Polyortha*. Three species included; c. f. p. 313.

Ardeutica MEYRICK

Ardeutica MEYRICK 1913, Trans. ent. Soc. London, **1913**: 172. Type-species: *Ardeutica spumosa* MEYRICK, 1913.

Forewing as in *Polyortha*, but in originally included species with smaller groups of erect scales. Venation: in forewing of the type-species m_3—cu_1 connate or short stalked, in other species distinctly separate. In hindwing veins rr—m_1 and m_3—cu_1 usually stalked, somewhat variable.

Male genitalia (figs. 9—11). Uncus slender, curved; gnathos simple, with variably long terminal plate. Socius long, drooping, in type-species tapering terminally and provided with minute apical dents, in other species rounded distally. Valva large with long dorsal split. Transtilla weak, fused with vallum penis and membranously connected with lateral part of juxta (in the type-species indistinctly seen in the genitalia slide). Coecum penis almost completely atrophied.

Female genitalia (fig. 12) unknown in the type-species. In *sphenobathra* sterigma is elongate, with distinctly sclerotized ventral edge, membranous dorsally and around ostium bursae; antrum with short, folding dorsally internal sclerite. Ductus bursae long, sack-shaped corpus bursae rather weakly differentiating; ductus seminalis thin, dorsal, situated just before antrum.

Comments. The type-species and *semipicta* differ from remaining species of this genus in long, specialised socius and long aedeagus. The venation is rather variable and for instance in *sphenobathra* the veins m_3—cu_1 extend from the median cell stalked, from one point or are very strongly approximate basally. Also the stalk of rr—m_1 is variably long. In the male genitalia the most important character is most probably the simple uncus which in the known species is uniformly broad throughout and provided with delicate longitudinal rib extending in distal portion ventrally.

Polyortha DOGNIN

Polyortha DOGNIN 1905, Annls. Soc. ent. Belg., **49**: 85. Type species: *Polyortha niveipunctata* DOGNIN 1905 (by original designation).

In this genus belong the species with *Acleris* appearance. Venation: in forewing all veins separate, r_5 to apex, distance between bases of m_3—cu_1 more

or less distinct; in hindwing rr—m_1 usually stalked, m_3—cu_1 short stalked or approaching one another basally.

Male genitalia (figs. 11, 12): Uncus club-shaped provided with ventro-apical dent accompanied by a solitary, scarcely hairy membranous sack resembling socius. Gnathos simple, with well developed terminal plate. Valva large with equally long dorsal split. Aedeagus flattened dorso-ventrally, terminating in ventral process. Transtilla strong, laterally fused with densely spined vallum penis and with lateral portions of juxta.

Female genitalia similar to those in *Ardeutica*; strigma with usually distinctly sclerotized ventral edge, expanding in middle ventrally; dorsal portion usually membranous, sculptured. Antrum short, with internal sclerite folded dorsally along both lateral edges. Bursa copulatrix sack-shaped, with lateral walls usually folding longitudinally in some areas often provided with various sclerites; signum in distal portion of corpus bursae rather weak, specialised plate, if present.

Pseudatteria WALSINGHAM

Pseudatteria WALSINGHAM, 1913, Biologia cent.-am. Zool., *Lepid.-Heterocera*, 4: 214; 1914: 267. Type-species: *Pseudatteria potamites* WALSINGHAM, 1913 = *Atteria rivularis* BUTLER, 1875 (by original designation and monotypy).

OBRAZTSOV, 1966 (revision).

Forewing elongate-ovate; coloration of telechromatic type: ground colour usually orange-red, forewing costa and termen white, pattern represented by black spots and (or) stripes. Venation: all veins separate except for hindwing m_3—cu_1 which are often connate.

Male genitalia as in *Polyortha*.

Female genitalia (cf. OBRAZTSOV, 1966) as in *Polyortha* but often distal portion of bursa copulatrix broad, more or less distinctly sclerotized and spined; signum usually present, variable in shape (concave or flat often scobinate plate).

Polythora gen. nov.

Type-species: *Peronea viridescens* MEYRICK, 1912

Externally similar to some species of *Polyortha*, with small groups of appressed scales in forewing. Venation as in mentioned genus (in hindwing m_3—cu_1 very short stalked).

Male genitalia (figs. 13, 14): uncus very broad, tapering terminally, provided with ventro-apical thorn, without membranous sack. Transtilla absent; dorsal portion of anellus forming broad, folding dorso-laterally transverse plate extending ventrally to lateral edges of juxta, concave and weakly sclerotized medially between these prominences. Otherwise as in *Polyortha*.

Female genitalia as in *Polyortha*; distal portion of ductus bursae broad; ductus seminalis dorso-lateral, extending from ductus bursae as in preceding genus just before antrum.

The genus is monotypical.

Review of the Neotropical species

The species are listed alphabetically. There are 9 species the generic positions of which remains unknown. Some of them are known as the females only or the genitalia have not been examined. Three species (*corusca*, *thammiana* and *tersa*) need further study despite their males are examined. The species of *Pseudatteria* are listed by OBRAZTSOV, 1966.

Histura gen. nov.
H. cuprata (MEYRICK), comb. nov.
H. hirsuta (MEYRICK), comb. nov.
H. limosa (MEYRICK), comb. nov.
Lypothora gen. nov.
L. blanchardi (BUTLER), comb. nov.
L. fernaldi (BUTLER), comb. nov.
L. walsinghami (BUTLER), comb. nov.
Ardeutica MEYRICK
A. crypsilitha (MEYRICK), comb. nov.
A. semipicta MEYRICK
A. sphenobathra (MEYRICK), comb. nov.
Polyortha DOGNIN
P. biezankoi BECKER
P. bryographa (MEYRICK)
P. bryometalla MEYRICK
P. chiriquitana (ZELLER)
P. glaucotes WALSINGHAM
P. gradatulana (ZELLER)
P. halianassa MEYRICK
P. magnificana WALSINGAM
P. nigriguttata WALSINGHAM
P. niveipunctata DOGNIN
P. trochillodes (MEYRICK)
Polythora gen. nov.
P. viridescens (MEYRICK), comb. nov.
Species incertae sedis
Cnephasia corusca MEYRICK
Polyortha dryocremna MEYRICK
Polyortha euchlorana WALSINGHAM
Polyortha eupeplana WALSINGHAM
Polyortha fluminana WALSINGHAM
Peronea marmarodes MEYRICK
Polyortha suffalcata WALSINGHAM
Polyortha tersa WALSINGHAM
Teras thammiana ZELLER

Arrangement of the genera of *Polyorthini*

The genital differences are among the species of this tribe rather slight and the coloration often is distinctly variable. This also concerns the genera and causes some difficulties in building the generic system of the Old World *Polyorthini* as pointed by DIAKONOFF (1974). As he realised, after separating *Apura* TURNER, *Scytalognatha* DIAK. and *Cnephasitis* RAZ. two groups of species remained. To separate them (under the names *Polylopha* TURNER and *Lopharcha* DIAK.) DIAKONOFF used such external characters as the shape of the wings, the pattern and coloration and the form of the signum in the female

genitalia. In the discussed system the position of *Lophoprora* MEYRICK is unexplaned, but the genus was placed at the beginning of the system.

The present generic arrangement (fig. 1) is based mainly on the genital characters. Of the Old World genera the most primitive characters (cf. RAZOWSKI, 1979) show West Palaearctic *Olindia* HÜBNER and *Isotrias* MEYRICK as they have fully developed internal musculature of the valva. In *Olindia*

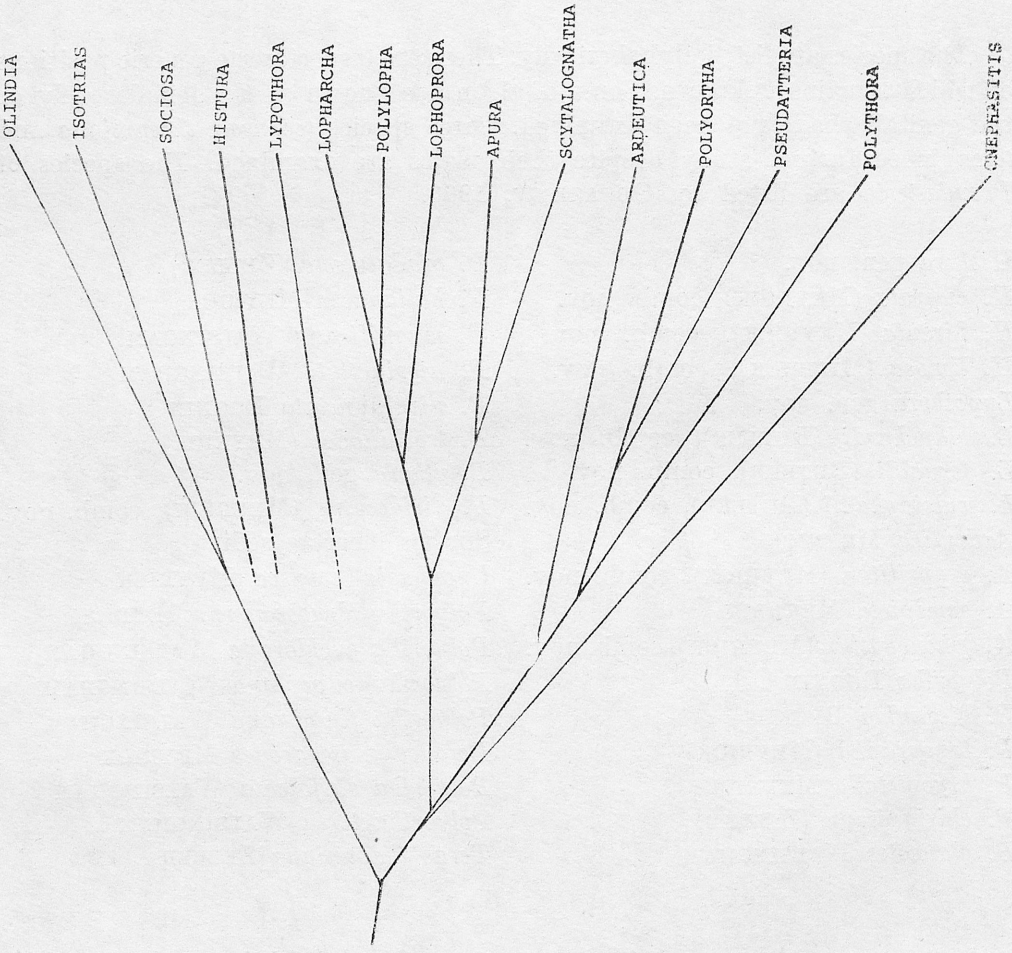

Fig. 1. Phylogenetic tree of *Polyorthini*

the gnathos is typically developed and the transtilla continuous, strong. The representatives of *Isotrias* have simple uncus but highly specialized gnathos the arms of which are separated from one another, broadening terminally and transtilla atrophied medially. There is no species that shares the characters of these two genera and the following groups of the tribe.

Sociosa DIAKONOFF (East Oriental) shows some highly specialized characters, viz., the shape of the socius, weak gnathos, short costa of the valva and trans-

formed dorsal portion of the vallum penis. This genus has a separate position in the tribe.

Similarly as in case of *Sociosa*, the position of two Neotropical genera, *Histura* and *Lypothora* is uncertain and their affinities remain obscure. First of them is known as the female only but is distinct by median position of the ductus seminalis, coiled proximal portion of the ductus bursae and transverse signum. *Lypophora* is characterized by long socius and peculiar signa resembling those in *Eucosmini*.

The previously mentioned problem of *Lopharcha* — *Polylopha* is still open and even more complicated by introduction of the Neotropical *Ardeutica*, however, it is placed in the Neotropical subgroup of genera as having some differences mainly in the bursa copulatrix. In the Old World subgroup belong *Lophoprora*, *Apura* and most probably *Scytalognatha*, however, DIAKONOFF (1974) characterized it by lack of the transtilla. In all these genera (excepting *Scytalognatha*?) the anellus is similarly developed, e. a. the transtilla is band-shaped, fused with spined dorsal portion of vallum penis. The uncus in all of them is slender, curved ventrad and the socius simple, drooping. The valva is typical of *Polyorthini*, e. a. with long dorsal split. Unfortunately the musculature of the male genitalia has not been studied, but I suppose that the internal muscles of the valva are well developed.

Lophoprora is insufficiently studied but probably was correctly placed by DIAKONOFF at the beginning of his system. It characterizes with delicate gnathos, long ductus bursae and thin, transverse signum. Position of the ductus seminalis is unknown. In the majority of the species of *Polylopha* a peculiar plate-shaped, longitudinally folded signum has developed. The position of the ductus seminalis is not studied to date. *Lopharcha* is characterized by DIAKONOFF as having a large diverticle of the median portion of the ductus bursae and a brushy signum (if present). In the males the aedeagus is usually long, without coecum penis. The hindwing is very slender, and veins m_3—cu_1 stalked. In *Apura* and *Scytalognatha* the gnathos is specialized, being in the first genus armed with a pair of terminal lobes and in the second provided with strong, spined terminal plate. The female is known only in *Apura* and its genitalia are characterized with large antrum at the beginning of which opens the ductus seminalis, and with plate-shaped scobinate signum.

The Neotropical subgroup of genera is distinct by the sack-shaped bursa copulatrix in which the corpus bursae is rather weakly differentiated. The ductus seminalis is posterior and the gnathos delicate. The uncus is slender, uniformly broad throughout or somewhat expanding terminally in *Ardeutica*, whilst in *Polyortha*, *Pseudatteria* and *Polythora* highly specialized. It is club-shaped in two first genera, provided with ventro-terminal thorn accompanied by a socius like soft process. The internal muscles of valvae are reduced to some degree (cf. RAZOWSKI, 1979). The bursa copulatrix is provided with various sclerites or true signa. *Pseudatteria* differs from *Polyortha* mainly in the coloration. The bursa copulatrix is somewhat different from that in *Polyortha*, but this

character is probably of an secondary importance. The monotypical genus *Polythora* is an offshoot of the preceding branch and differs from preceding genera in lack of transtilla and very broad uncus. The female genitalia resemble those in *Pseudatteria*.

Cnephasitis RAZ. has strongly reduced valval musculature and rudimentary dorsal split. The coremata are completely atrophied. It is supposed (cf. RAZOWSKI, 1979) that *Cnephasitis* is the most advanced genus of this tribe.

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STRESZCZENIE

Praca jest rewizją rodzajów *Polyorthini*, zawiera redeskrypcje 4 rodzajów i opis 3 nowych rodzajów neotropikalnych. Poza uzasadnieniem nowo wprowadzonego systemu podano wykaz gatunków południowoamerykańskich.

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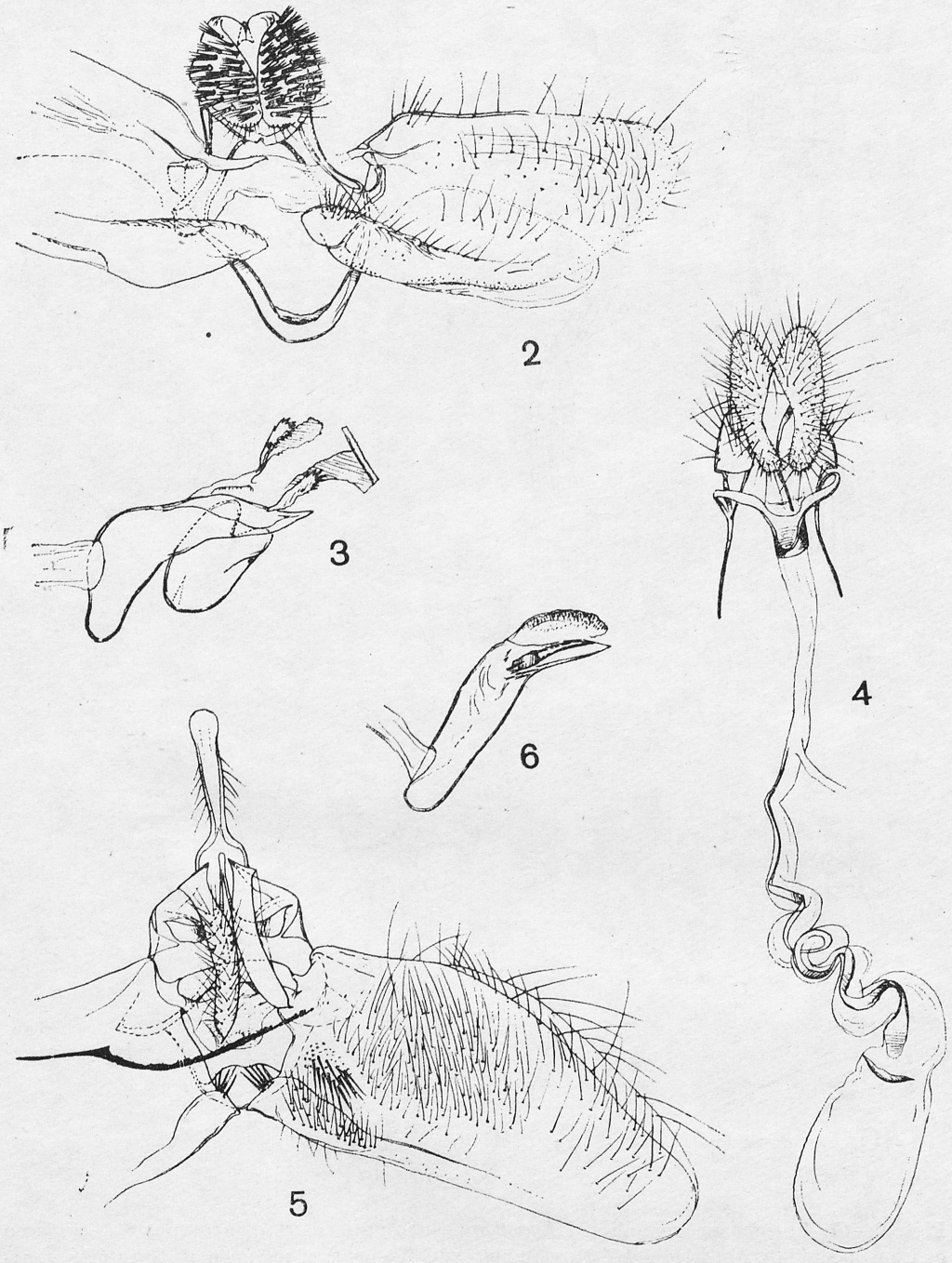
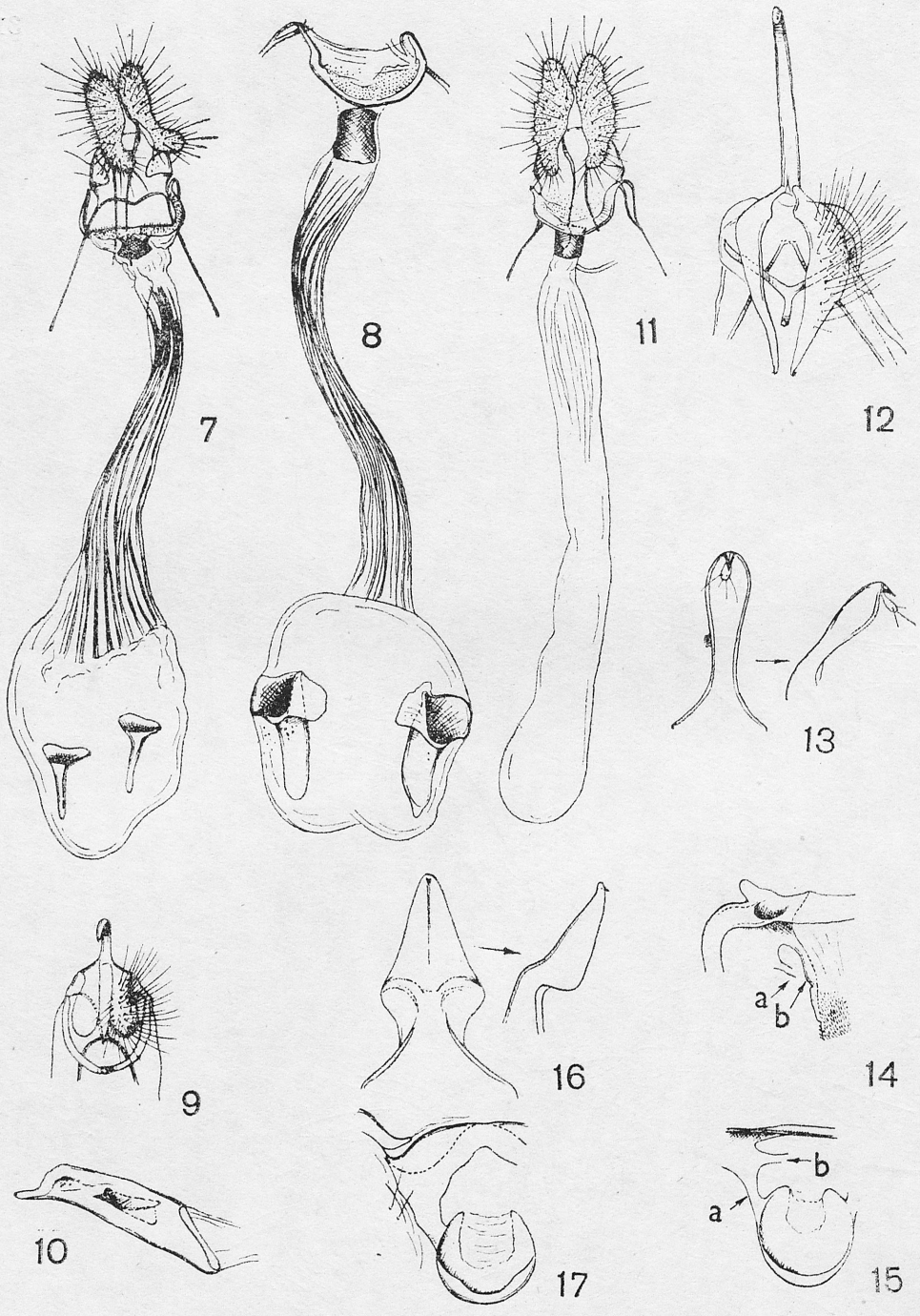


Figs. 2—6: 2 — male genitalia of *Sociosa macrographa* (DIAK.), holotype, 3 — aedeagus of same specimen, 4 — female genitalia of *Histura hirsuta* (WALSM.), holotype, 5 — male genitalia of *Lypothora walsinghami* (BUTL.), holotype, 6 — aedeagus of same specimen



Figs. 7—17: 7 — female genitalia of *Lypothora blanchardi* (BUTL.), holotype, 8 — sterigma and bursa copulatrix of *L. fernaldi* (BUTL.), holotype, 9 — part of tegumen of *Ardeutica sphenobathra* (MEYR.), lectotype, 10 — aedeagus of same specimen, 11 — tegumen of *A. spumosa* MEYR., holotype, 12 — female genitalia of *Ardeutica* sp., Brazil, 13 — uncus of *Polyortha biezankoi* BECKER, Brazil, 14 — same species, base of valva with part of anellus and juxta, 15 — uncus of *Polythora viridescens* (MEYR.), Brazil 16 — base of valva and part of anellus of same species, dorsal view, 17 — same, distal view